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10/722,998	11/26/2003	Daniel Mulligan	SIG000111	6604

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EXAMINER
BRADLEY, MATTHEW A

ART UNIT	PAPER NUMBER
2187	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
	10/722,998	MULLIGAN, DANIEL
Office Action Summary	Examiner	Art Unit	
	MATTHEW BRADLEY	2187	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

> A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
> WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
> - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
>   after SIX (6) MONTHS from the mailing date of this communication.
> - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
> - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
>   Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
>   earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>30 June 2008</u>.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-20</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
         application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 30 June 2008 has been entered.

Claim Status

Claims 1-20 remain pending and are ready for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **1-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Chrisop et al (U.S. Patent Application Publication 2003/0043638), hereinafter referred to as Chrisop, and in view of Brady et al (U.S. 5,784,698), hereinafter referred to as Brady.

As per independent claim **1**, Chrisop teach the limitations as noted supra.

- o   determining mode of operation of the multiple function integrated circuit;

    (Paragraph 0023) *The Examiner notes that the system allocates RAM in*

> *response to prompts that correspond to a selected operation within the*
> *system.*
>
> o identifying at least one active module of a plurality of modules of the
>   multiple function integrated circuit requiring a buffer based on the mode of
>   operation; (Paragraph 0023) *The Examiner notes that as discussed supra,*
>   *the system allocates memory for a specific device within the multifunction*
>   *peripheral device. Accordingly, the system of Chrisop identifies an active*
>   *module from the multifunction peripheral device that requires memory to*
>   *operate.*

Chrisop does not explicitly teach, allocation of memory based on buffer
requirements.

Brady teaches,

> o determining buffer requirements for the at least one active module; and
>   allocating memory space of the shared memory within the multiple
>   function integrated circuit to the at least one active module based on the
>   buffer requirements (Column 2 line 57 to Column 3 line 6).

Chrisop and Brady are analogous art because they are from the same field of
endeavor namely, memory systems.

At the time of invention, it would have been obvious to one of ordinary skill in the
art, having both the teachings of Chrisop and Brady before him/her to combine the
dynamic memory allocation method of Brady with Chrisop for the benefit of reduced
memory fragmentation.

The suggestion for doing so would have been that, use of the Selection size parameter enables the amount of fragmented buffer space to be minimized by modifying the buffer selection criteria so that if a last buffer required to satisfy a requested buffer space allocation is only partially used, then several smaller buffers are selected instead (Column 5 lines 31-36 as well as Column 2 lines 38-41 of Brady).

Therefore, it would have been obvious to combine Chrisop with Brady for the benefit of reduced memory fragmentation to obtain the invention as specified in claims 1-20.

As per dependent claim **2**, the combination of Chrisop and Brady teach, wherein the at least one active module comprises at least two of: a processing unit; universal serial bus (USB) device; digital to analog converter (DAC); and analog to digital converter (ADC) (Paragraph 0029 of Chrisop). *The Examiner notes that, for example, the fax machine can be the device selected as the active module. This being the case, the fax machine contains a processing unit inside of it in addition to both a digital to analog converter that converts documents before sending over an analog communication medium as well as an analog to digital converter that converts incoming analog transmissions to digital documents. The same applies for a scanner and or a copier but the DAC and ADC have different inputs and outputs and outputs.*

As per dependent claim **3**, the combination of Chrisop and Brady teach, wherein the mode of operation comprises at least one mode of operation selected from the group comprising: a digital audio player mode; a file storage device mode; a digital multimedia player mode; an extended memory device mode; a digital audio recorder

mode; a digital multimedia recorder mode; and a personal data assistant (Paragraph

0023 of Chrisop). *The Examiner notes that as taught by Chrisop, the "RAM is allocated*

to the temporary storage of documents." Accordingly the system of Chrisop is acting as

a file storage device.

　　　As per dependent claim **4**, the combination of Chrisop and Brady teach,

- o changing the mode of operation of the multiple function integrated circuit

  to a second mode of operation; (Paragraph 0023 of Chrisop). *The*

  Examiner notes that the system allocates RAM in response to prompts

  that correspond to a selected operation within the system.

- o identifying at least one other active module of the plurality of modules

  requiring another buffer based on the second mode of operation;

  (Paragraph 0023 of Chrisop). *The Examiner notes that as discussed*

  supra, the system allocates memory for a specific device within the

  multifunction peripheral device. Accordingly, the system of Chrisop

  identifies an active module from the multifunction peripheral device that

  requires memory to operate. As taught in Paragraph 0029 of Chrisop, the

  system is able to allocate multiple areas of the RAM to different functions

  of the system.

- o determining buffer requirements for the at least one other active module;

  and allocating memory space of the shared memory for the another buffer

  to be used by the at least one active module (Column 2 line 57 to Column

  3 line 6 of Brady).

As per dependent claim **5**, the combination of Chrisop and Brady teach, wherein the at least one active module has digital memory access (DMA) to the shared memory (Paragraph 0023 of Chrisop). *The Examiner notes that the MFP system of Christop has access to digital RAM.*

As per dependent claim **6**, the combination of Chrisop and Brady teach, wherein the shared memory comprises on-chip random access memory (Paragraph 0029 of Chrisop). *The Examiner notes that the RAM is shown as on-chip RAM in figure 1 item 106.*

As per independent claim **7**, the combination of Chrisop and Brady teach,

- o determining a first mode of operation of the multiple function integrated circuit; (Paragraph 0023 of Chrisop) *The Examiner notes that the system allocates RAM in response to prompts that correspond to a selected operation within the system.*

- o identifying at least one active module of a plurality of modules of the multiple function integrated circuit requiring a buffer based on the first mode of operation; (Paragraph 0023 of Chrisop). *The Examiner notes that as discussed supra, the system allocates memory for a specific device within the multifunction peripheral device. Accordingly, the system of Chrisop identifies an active module from the multifunction peripheral device that requires memory to operate.*

- o determining buffer requirements for the at least one active module; and allocating, based on the buffer requirements, memory space of the shared

memory for a buffer to be used by the at least one active module (Column 2 line 57 to Column 3 line 6 of Brady).

As per dependent claim **8**, the combination of Chrisop and Brady teach, detecting activation of the multiple function integrated circuit; (Paragraph 0023 of Chrisop).

As per dependent claim **9**, the combination of Chrisop and Brady teach,

- o detecting a change from the first mode of operation of the multiple function integrated circuit to a second mode of operation; (Paragraph 0023 of Chrisop). *The Examiner notes that the system allocates RAM in response to prompts that correspond to a selected operation within the system.*

- o identifying at least one active module of the plurality of modules of the multiple function integrated circuit requiring a buffer based on the second mode of operation; (Paragraph 0023 of Chrisop). *The Examiner notes that as discussed supra, the system allocates memory for a specific device within the multifunction peripheral device. Accordingly, the system of Chrisop identifies an active module from the multifunction peripheral device that requires memory to operate. As taught in Paragraph 0029 of Chrisop, the system is able to allocate multiple areas of the RAM to different functions of the system.*

- o determining buffer requirements for the at least one active module; and allocating memory space of the shared memory for a buffer to be used by the at least one active module (Column 2 line 57 to Column 3 line 6 of Brady).

As per dependent claim **10**, the combination of Chrisop and Brady teach, wherein the at least one active module comprises: a processing unit; universal serial bus (USB) device; digital to analog converter (DAC); and analog to digital converter (ADC) (Paragraph 0029 of Chrisop). *The Examiner notes that, for example, the fax machine can be the device selected as the active module. This being the case, the fax machine contains a processing unit inside of it in addition to both a digital to analog converter that converts documents before sending over an analog communication medium as well as an analog to digital converter that converts incoming analog transmissions to digital documents. The same applies for a scanner and or a copier but the DAC and ADC have different inputs and outputs.*

As per dependent claim **11**, the combination of Chrisop and Brady teach, wherein the first mode of operation and second mode of operation comprise at least one mode of operation selected from: a digital audio player mode; a file storage device mode; a digital multimedia player mode; an extended memory device mode; a digital audio recorder mode; a digital multimedia recorder mode; and a personal data assistant (Paragraph 0023 of Chrisop). *The Examiner notes that as taught by Chrisop, the "RAM is allocated to the temporary storage of documents." Accordingly the system of Chrisop is acting as a file storage device.*

As per dependent claim **12**, the combination of Chrisop and Brady teach, wherein the at least one active module has digital memory access (DMA) to the shared memory (Paragraph 0023 of Chrisop). *The Examiner notes that the MFP system of Christop has access to digital RAM.*

As per dependent claim **13**, the combination of Chrisop and Brady teach, wherein the shared memory comprises on-chip random access memory (Paragraph 0029 of Chrisop). *The Examiner notes that the RAM is shown as on-chip RAM in figure 1 item 106.*

As per independent claim **14**, the combination of Chrisop and Brady teach,

- o   processing module; and (Figure 1 - allocator of Chrisop)

- o   memory operably coupled to the processing module, wherein the memory and processing module are within a single multiple function integrated circuit, wherein at least portion of the memory functions as the shared memory and wherein the memory stores operational instructions that cause the processing module to: detect activation of the multiple function integrated circuit; (Figure 1 item 120 of Chrisop)

- o   determine a first mode of operation of the multiple function integrated circuit; (Paragraph 0023 of Chrisop). *The Examiner notes that the system allocates RAM in response to prompts that correspond to a selected operation within the system.*

- o   identify at least one active modules of the multiple function integrated circuit requiring a buffer based on the first mode of operation; (Paragraph 0023 of Chrisop). *The Examiner notes that as discussed supra, the system allocates memory for a specific device within the multifunction peripheral device. Accordingly, the system of Chrisop identifies an active*

> *module from the multifunction peripheral device that requires memory to operate.*

- o determine buffer requirements for the at least one active module; and allocate, based on the buffer requirements memory space within the RAM for a buffer to be used by the at least one active module (Column 2 line 57 to Column 3 line 6 of Brady).

As per dependent claim **15**, the combination of Chrisop and Brady teach,

- o detect a change from the first mode of operation of the multiple function integrated circuit to a second mode of operation; (Paragraph 0023 of Chrisop). *The Examiner notes that the system allocates RAM in response to prompts that correspond to a selected operation within the system.*

- o identify at least one active module of the plurality of modules of the multiple function integrated circuit requiring a buffer based on the second mode of operation; (Paragraph 0023 of Chrisop). *The Examiner notes that as discussed supra, the system allocates memory for a specific device within the multifunction peripheral device. Accordingly, the system of Chrisop identifies an active module from the multifunction peripheral device that requires memory to operate. As taught in Paragraph 0029 of Chrisop, the system is able to allocate multiple areas of the RAM to different functions of the system.*

- o determine buffer requirements for the at least one active module; and allocate memory space of the shared memory for a buffer to be used by

the at least one active module (Column 2 line 57 to Column 3 line 6 of

Brady).

As per dependent claim **16**, the combination of Chrisop and Brady teach, wherein

the at least one active module further comprises at least one of: universal serial bus

(USB) device; a flash memory device; an electronically programmable read only

memory (EPROM) device; a multi-wire device; a hard drive device; digital to analog

converter (DAC); and analog to digital converter (ADC) (Paragraph 0024 of Chrisop).

The Examiner incorporates by reference herein the comments made supra with respect

to claim 1 and the fax machine.

As per dependent claim **17**, the combination of Chrisop and Brady teach, wherein

the first mode of operation and second mode of operation comprise at least one mode

of operation selected from: a digital audio player mode; a file storage device mode; a

digital multimedia player mode; an extended memory device mode; a digital audio

recorder mode; a digital multimedia recorder mode; and a personal data assistant

(Paragraph 0023 of Chrisop). *The Examiner notes that as taught by Chrisop, the "RAM*

is allocated to the temporary storage of documents." Accordingly the system of Chrisop

is acting as a file storage device.

As per dependent claim **18**, the combination of Chrisop and Brady teach, wherein

the at least one active module has digital memory access (DMA) to the shared memory

(Paragraph 0023 of Chrisop). *The Examiner notes that the MFP system of Christop has*

access to digital RAM.

As per dependent claim **19**, the combination of Chrisop and Brady teach, wherein

the processing module determines the first mode of operation from initialization inputs to

the multiple function integrated circuit, wherein the initialization inputs identify active

modules operable coupled to the multiple function integrated circuit (Paragraph 0023-

0025 of Chrisop). *The Examiner incorporates by reference herein the comments made*

supra with respect to claim 1.

As per dependent claim **20**, the combination of Chrisop and Brady teach, wherein

the active modules include at least one of: universal serial bus (USB) device; a flash

memory device; an electronically programmable read only memory (EPROM) device; a

multi-wire device; a hard drive device; digital to analog converter (DAC); and analog to

digital converter (ADC) (Paragraph 0024 of Chrisop). *The Examiner incorporates by*

reference herein the comments made supra with respect to claim 1 and the fax

machine.

Response to Arguments

Applicant's arguments filed 28 May 2008 have been carefully and fully

considered but they are not fully persuasive.

With respect to Applicant's argument located within the last paragraph of the

second page of the instant remarks (numbered as page 8) which recites:

> *"With respect to claim 1, Chrisop does not teach or suggest determining a mode*
> *of operation of the multiple function integrated circuit and identifying at least one*
> *active module of a plurality of modules of the multiple function integrated circuit*
> *requiring a buffer based on the mode of operation."*

The Examiner respectfully disagrees. Chrisop teaches in Paragraphs 0023-0026

allocation of memory for the multifunction peripheral based on selection of function for

the multifunction peripheral. This is also shown in Figure 4 and taught further in

Paragraphs 0036-0037.

Any argument not specifically addressed is considered moot in view of the new

ground(s) of rejection as noted *supra*.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Matthew Bradley whose telephone number is (571) 272-

8575. The examiner can normally be reached on 6:30-3:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Kevin Ellis can be reached on (571) 272-4205. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KLE/mb

/Kevin L Ellis/
Acting SPE of Art Unit 2187